REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-9 are currently pending, Claims 1-8 having been amended, and Claim 9 having been added. The changes and additions to the claims do not add new matter and are supported by the originally filed specification, for example, on page 11, lines 1-8; page 23, line 23 to page 24, line 19; page 25, line 10-22; and Fig. 1.

In the outstanding Office Action, the specification was objected to; Claims 3, 5, and 7 were objected to for informalities; Claims 1 and 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Soltz (U.S. Patent No. 4,397,194) in view of Takeda et al. (JP Appl. No. 2001-329654, hereafter "Takeda I") and Takeda et al. ("Flow mapping of the mercury flow," hereafter "Takeda II"); and Claims 2-4 and 6-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Soltz in view of Takeda I, Takeda II, and Huang (U.S. Pub. No. 2002/0011120).

With respect to the objection to the specification, Applicants respectfully submit that the specification has been amended to move the Brief Description of the Drawings, amend the Abstract, and correct the specification as suggested in the Office Action. Therefore, Applicants respectfully submit that this ground of objection is overcome.

With respect to the objection to Claims 3, 5, and 7, Applicants respectfully submit that the present amendments to Claims 3, 5, and 7 overcome the respective grounds of objection.

With respect to the rejection of Claim 1 under 35 U.S.C. §103(a), Applicants respectfully submit that the amendment to Claim 1 overcomes this ground of rejection. Amended Claim 1 recites, *inter alia,*

> wherein the transducer is fixed on the wedge such that at the prescribed frequency, a distance of wave propagation from said ultrasonic transducer to an outer surface of the fluid pipe is an integral multiple of a half-wave length of an ultrasonic wave incident into the fluid to be measured, and the prescribed frequency is determined by:
>
> determining a distance of wave propagation from the outer surface of the fluid pipe to an inner surface of the fluid pipe, and
>
> setting the prescribed frequency as a frequency of an ultrasonic wave for which the distance of wave propagation from the outer surface of the fluid pipe to the inner surface of the fluid pipe is an integral multiple of a half-wave length of an ultrasonic wave incident into the fluid to be measured.

Applicants respectfully submit that Soltz, Takeda I, and Takeda II fail to disclose or suggest at least these features of amended Claim 1.

Soltz is directed to an ultrasonic flowmeter for measuring pipe geometry. Fig. 2 of Soltz shows upstream and downstream transducers 11 and 12 mounted externally on the same side of a pipe and coupled to the pipe by wedges 16 and 17 respectively.

The Office Action acknowledges that Soltz fails to disclose the claimed "flow velocity distribution means" and the "flow rate operation means." (See Office Action, at page 5). The Office Action further acknowledges that Soltz and Takeda I fail to disclose or suggest that "the distance from said ultrasonic transmitter to the outer surface of the fluid pipe and the distance from the outer surface of the fluid pipe to the inner surface of the fluid pipe through which the ultrasonic wave passes are formed to be an integral multiple of a half-wave length of ultrasonic wave indicent into the fluid to be measured," as recited in original Claim 1. (See Office Action, at page 6).

Accordingly, Applicants submit that Soltz and Takeda I also fail to disclose or suggest "the transducer is fixed on the wedge such that at the prescribed frequency, a distance of

wave propagation from said ultrasonic transducer to an outer surface of the fluid pipe is an integral multiple of a half-wave length of an ultrasonic wave incident into the fluid to be measured, and the prescribed frequency is determined by: determining a distance of wave propagation from the outer surface of the fluid pipe to an inner surface of the fluid pipe, and setting the prescribed frequency as a frequency of an ultrasonic wave for which the distance of wave propagation from the outer surface of the fluid pipe to the inner surface of the fluid pipe is an integral multiple of a half-wave length of an ultrasonic wave incident into the fluid to be measured," as recited in amended Claim 1.

The Office Action relied on Takeda II to remedy the deficiencies of Soltz and Takeda I with regard to original Claim 1. (See Office Action, at page 6).

Takeda II is directed to a method of mapping a mercury flow contained in a stainless steel wall using an ultrasonic velocity profile (UVP). Takeda II describes the characteristics of transmission of ultrasound in various materials (see Section 2.1). Takeda describes that maximum transmission of an ultrasonic wave occurs at $d/\lambda = n/2$, where n is an integer. (See Section 2.1, Equation (2)).

The Office Action takes the position that from Equation (2) discussed above, Takeda II teaches that "the distance between the transmitter and the wedge, as well as the wall thickness should be integral multiples of the half-wave length of the frequency incident to the fluid." (See Office Action, at page 6).

However, Takeda II only describes that a preferable ratio of a distance to the wavelength is an integral multiple of one half. Takeda II does not disclose or suggest setting a transducer distance to the outer surface of a fluid pipe based on both a predetermined frequency and keeping the transducer distance an integral multiple of a half-wave length of the wave, where the predetermined frequency is determined to be the frequency at which a

distance of propagation of the wave while inside the pipe wall is an integral multiple of a half-wave length of the wave.

Therefore, Takeda II fails to disclose or suggest "the transducer is fixed on the wedge such that at the prescribed frequency, a distance of wave propagation from said ultrasonic transducer to an outer surface of the fluid pipe is an integral multiple of a half-wave length of an ultrasonic wave incident into the fluid to be measured, and the prescribed frequency is determined by: determining a distance of wave propagation from the outer surface of the fluid pipe to an inner surface of the fluid pipe, and setting the prescribed frequency as a frequency of an ultrasonic wave for which the distance of wave propagation from the outer surface of the fluid pipe to the inner surface of the fluid pipe is an integral multiple of a half-wave length of an ultrasonic wave incident into the fluid to be measured," as recited in amended Claim 1.

Therefore, Takeda II fails to remedy the deficiencies of Soltz and Takeda I with regard to amended Claim 1. Thus, Applicants respectfully submit that Claim 1 (and all associated dependent claims) patentably distinguishes over Soltz, Takeda I, and Takeda II, either alone or in proper combination.

Huang has been considered but fails to remedy the deficiencies of Soltz, Takeda I, and Takeda II with regard to amended Claim 1. Thus, Applicants respectfully submit that Claim 1 (and all associated dependent claims) patentably distinguishes over Soltz, Takeda I, Takeda II, and Huang, either alone or in proper combination.

Additionally, Applicants submit that Claim 5 (and all associated dependent claims) and new Claim 9 patentably distinguish over Soltz, Takeda I, Takeda II, and Huang, either alone or in proper combination, for similar reasons as discussed above with regard to Claim 1.

Consequently, in light of the above discussion and in view of the present amendment, the outstanding grounds for rejection are believed to have been overcome. The present application is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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